

**Amendment and Response**

Applicant: Andrew Harvey Barr et al.

Serial No.: 10/621,925

Filed: July 17, 2003

Docket No.: 200308576-1 (H300.213.101)

Title: ALTERNATING VOIDED AREAS OF ANTI-PADS

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**REMARKS**

The following remarks are made in response to the Office Action mailed December 15, 2004. Claims 1-31 were rejected. With this Response, claim 1 has been amended. Claims 1-31 remain pending in the application and are presented for reconsideration and allowance.

**Oath/Declaration**

The Examiner stated that the Oath/Declaration is defective because the name and residence of the first named inventor are garbled most likely due to a copying/printing malfunction. A copy of the original Declaration and Power of Attorney, which clearly shows the name and residence of the first named inventor, has been enclosed with this Response. Applicants respectfully request that this Declaration be accepted.

**Drawings**

The Drawings are objected to because the sectional views are not properly cross-hatched. Figures 2, 4, 5-8, and 10 have been amended to show proper cross-hatching. Drawing elements 10, 30, 200, 200', 210, 210', 220, 300, 400, 400', 500, 500', 600, and 600' have not been cross-hatched to more easily distinguish those element features. Therefore, Applicants respectfully request that the objection to the drawings be withdrawn.

**Specification**

The Examiner objected to the Abstract because of the use of the phrase "a printed circuit board comprises." The Abstract has been amended to replace the word comprises with includes. Therefore, Applicants respectfully request that the objection to the Abstract be withdrawn.

The Background section of the specification has been amended to correct a typographical error.

**Claim Rejections under 35 U.S.C. § 102**

The Examiner rejected claims 1-3 and 5-6 under 35 U.S.C. § 102(b) as being anticipated by the Kobayashi U.S. Patent No. 6,229,095.

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Applicants submit that the Kobayashi patent fails to teach or suggest the invention of amended independent claim 1. Amended independent claim 1 includes the limitations of a first anti-pad positioned between the first conductive plane and the via signal barrel, the first anti-pad having a first voided area and a first non-voided area; and a second anti-pad positioned between the second conductive plane and the via signal barrel, the second anti-pad having a second voided area and a second non-voided area. The Kobayashi patent fails to disclose these claimed limitations. The clearance 271 and clearance 272 disclosed in the Kobayashi patent do not include non-voided areas. Clearance 271 is a gap formed between through hole 211 and ground pattern 2210 and is uniformly formed around the entire periphery of through hole 211. (Col. 7, lines 35-37). Clearance 272 is a gap formed between through hole 211 and power source pattern 2310 and is uniformly formed around the entire periphery of through hole 211. (Col. 7, lines 57-59). Therefore, amended independent claim 1 is believed to be allowable over the Kobayashi patent.

Dependent claims 2-3 and 5-6 further define patentably distinct claim 1. Accordingly, dependent claims 2-3 and 5-6 are also believed to be allowable over the Kobayashi patent. Applicants respectfully request that the rejections to claims 1-3 and 5-6 under 35 U.S.C. § 102(b) be withdrawn and that these claims be allowed.

The Examiner rejected claims 1, 8-13, 15, 18-20, 22, 24, 25, and 27-31 under 35 U.S.C. § 102(e) as being anticipated by the Hreish U.S. Patent No. 6,538,538.

Applicants submit that the Hreish patent fails to teach or suggest the invention of amended independent claim 1. Amended independent claim 1 includes the limitations of a first anti-pad positioned between the first conductive plane and the via signal barrel, the first anti-pad having a first voided area and a first non-voided area; and a second anti-pad positioned between the second conductive plane in the via signal barrel, the second anti-pad having a second voided area and a second non-voided area. The Hreish patent fails to disclose these claimed limitations. Figure 12 of the Hreish patent and the description for Figure 12 fail to disclose anti-pads having non-voided areas. Therefore, amended independent claim 1 is believed to be allowable over the Hreish patent.

Applicants submit that the Hreish patent fails to teach or suggest the invention of independent claim 8. Independent claim 8 includes the limitations of a first partially voided anti-pad positioned between the first conductive plane and the via signal barrel, the first

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partially voided anti-pad having a first pattern and a first orientation; and a second partially voided anti-pad positioned between the second conductive plane and the via signal barrel, the second partially voided anti-pad having a second pattern and a second orientation; wherein the first orientation is offset from the second orientation. The Hreish patent fails to disclose these claimed limitations. Figure 12 of the Hreish patent and the description for Figure 12 fail to disclose partially voided anti-pads and anti-pads having a pattern and an orientation. Therefore, independent claim 8 is believed to be allowable over the Hreish patent.

Applicants submit that the Hreish Patent also fails to disclose the invention of independent claim 15. Independent claim 15 includes the limitations of a first anti-pad positioned between the first conductive plane and the first via signal barrel, the first anti-pad having a first length and a first width and a first orientation; and a second anti-pad positioned between the second conductive plane and the first via signal barrel, the second anti-pad having a second length and a second width and a second orientation; wherein the first orientation is offset from the second orientation. The Hreish patent fails to disclose these claimed limitations. Figure 12 of the Hreish patent and the description for Figure 12 fail to disclose anti-pads having a length and a width and an orientation. The Examiner cites no text in the Hreish patent disclosing these limitations. Figure 12 by itself does not show these limitations. Nowhere in the description of Figure 12 is it mentioned that the areas between power and ground planes 87 and vertical conductor 86 include a length and a width and an orientation. Therefore, independent claim 15 is believed to be allowable over the Hreish patent.

Dependent claims 9-13 further define patentably distinct claim 8. Dependent claims 18-20 and 22 further define patentably distinct claim 15. Accordingly, dependent claims 9-13, 18-20, and 22 are also believed to be allowable over the Hreish patent. Accordingly, Applicants respectfully request that the above rejections of claims 1, 8-13, 15, 18-20, and 22 under 35 U.S.C. § 102(e) should be withdrawn and that these claims be allowed.

Applicants submit that the Hreish patent also fails to teach or suggest the invention of independent claim 24. Independent claim 24 includes the limitations of forming a first anti-pad positioned between the first conductive plane and the via signal barrel, such that the first anti-pad has a first orientation and a first void; and forming a second anti-pad positioned between the second conductive plane and the via signal barrel, such that the second anti-pad

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has a second orientation and a second void; wherein the first orientation is offset from the second orientation; and wherein the first void does not completely overlap the second void. The Hreish patent fails to disclose these claimed limitations. Figure 12 of the Hreish patent and the description for Figure 12 fail to disclose anti-pads having orientations offset from each other and voids that do not completely overlap. The Examiner cites no text in the Hreish patent disclosing these limitations and Figure 12 by itself does not show these limitations. Therefore, independent claim 24 is believed to be allowable over the Hreish patent.

Dependent claims 25, and 27-31 further define patentably distinct claim 24. Accordingly, dependent claims 25, and 27-31 are also believed to be allowable over the Hreish patent.

In addition, claim 27 requires that the first and second anti-pads are partially voided in a pattern. The Hreish patent does not disclose this limitation and the Examiner cites no support for the rejection.

Further, claim 28 requires the pattern comprises one of a symmetric pattern and an asymmetric pattern. The Hreish patent fails to disclose this limitation and the Examiner cites no support for the rejection.

In addition, claim 29 requires the pattern comprises one of a concentric circles pattern, a radial spokes pattern, and an arbitrary pattern. The Hreish patent fails to disclose this limitation and the Examiner cites no support for the rejection.

Further, claim 30 requires the pattern comprises a screen pattern. The Hreish patent fails to disclose this limitation and the Examiner cites no support for the rejection.

In view of the above, Applicants submit that the rejection to claims 24, 25, and 27-31 under 35 U.S.C. § 102(e) should be withdrawn and that these claims allowed.

**Claim Rejections under 35 U.S.C. § 103**

The Examiner rejected claims 4, 16, 17, 21, 23, and 26 under 35 U.S.C. § 103(a) as being unpatentable over the Hreish patent. Dependent claim 4 further defines patentably distinct claim 1. Accordingly, dependent claim 4 is also believed to be allowable over the art of record. Dependent claims 16-17, 21, and 23 further define patentably distinct claim 15. Accordingly, dependent claims 16-17, 21, and 23 are also believed to be allowable over the

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art of record. Dependent claim 26 further defines patentably distinct claim 24. Accordingly, dependent claim 26 is also believed to be allowable over the art of record.

In addition, Applicants respectfully traverse the rejection to claims 4, 16, 17, 21, 23, and 26 and the taking of official notice and respectfully request in accordance with MPEP § 2144.03, that the Examiner cite a reference(s) to teach the further limitations of claims 4, 16, 17, 21, 23, and 26.

In particular, Applicants request the Examiner cite a reference to teach the first and second anti-pads are longer in a first direction than in a second direction as recited in claim 4.

Applicants request the Examiner cite a reference to teach the first length and the first width are not equal as recited in claim 16.

Applicants request the Examiner cite a reference to teach the second length and the second width are not equal as recited in claim 17.

Applicants request the Examiner cite a reference to teach the first and second anti-pads are substantially oval shaped as recited in claims 21 and 26.

Applicants request the Examiner cite a reference to teach the a second via signal barrel parallel to the first via signal barrel and transecting the first and second conductive planes; a third anti-pad positioned between the second via signal barrel and the first conductive plane, the third anti-pad having a third orientation; and a fourth anti-pad positioned between the second via signal barrel and the second conductive plane, the fourth anti-pad having a fourth orientation; wherein the first and third orientations are substantially identical and adapted to allow a signal trace between the first and third anti-pads on an adjacent signal plane as recited in claim 23.

**CONCLUSION**

In view of the above, Applicant respectfully submits that pending claims 1-31 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-31 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 08-2025.

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The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to either David A. Plettner at Telephone No. (408) 447-3013, Facsimile No. (408) 447-0854 or Patrick G. Billig at Telephone No. (612) 573-2003, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

**Hewlett-Packard Company**  
Intellectual Property Administration  
P.O. Box 272400  
Fort Collins, Colorado 80527-2400

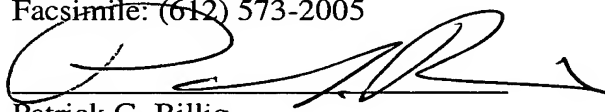
Respectfully submitted,

Andrew Harvey Barr et al.

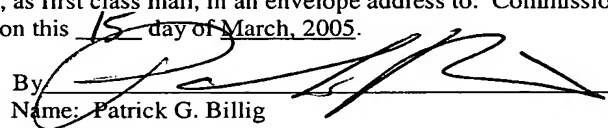
By their attorneys,

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Patrick G. Billig  
Reg. No. 38,080

**CERTIFICATE UNDER 37 C.F.R. 1.8:** The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 15 day of March, 2005.

By   
Name: Patrick G. Billig

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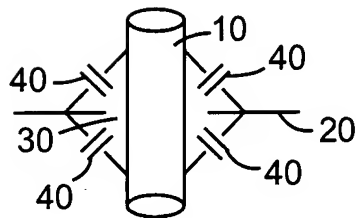
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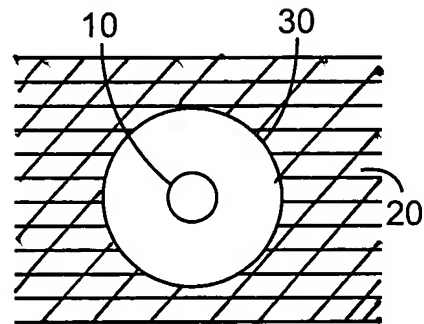
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**IN THE DRAWINGS**

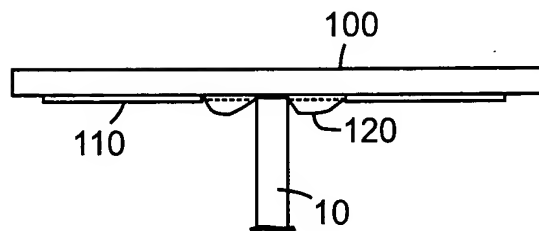
Please amend Figures 2, 4-8, and 10. Marked up Figures and replacement Figures are attached to this response.



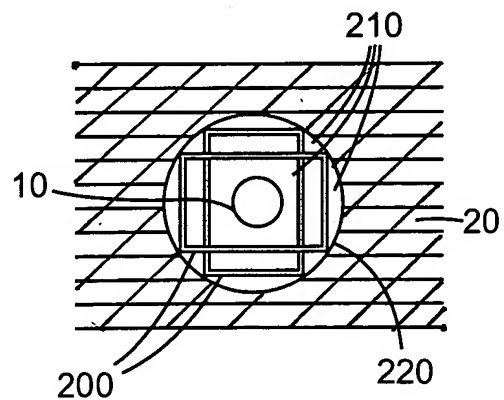
**Fig. 1**



**Fig. 2**

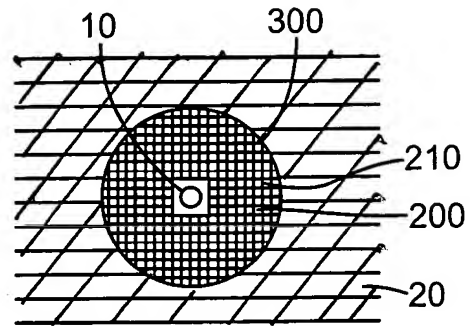


**Fig. 3**

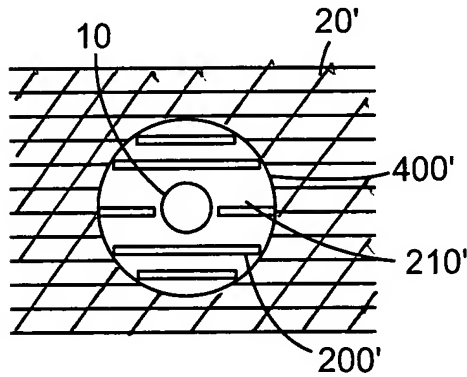
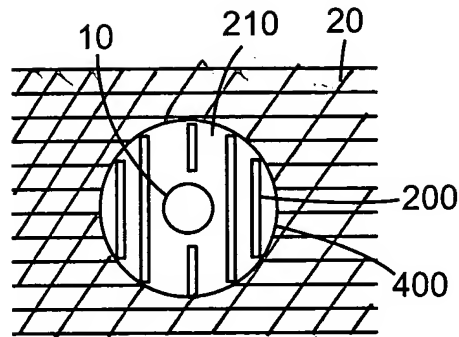


**Fig. 4**

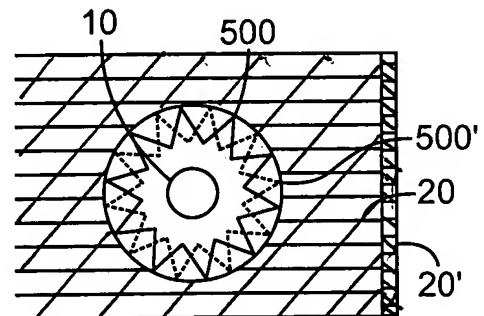




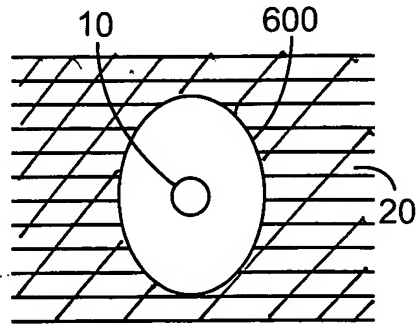
**Fig. 5**



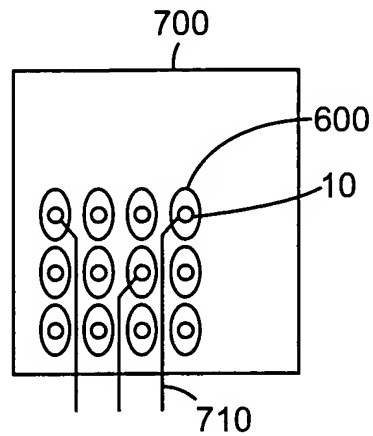
**Fig. 6**



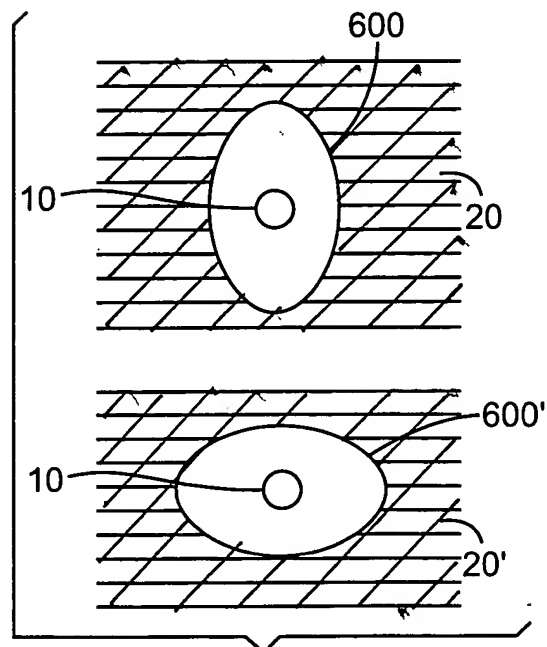
**Fig. 7**



**Fig. 8**



**Fig. 9**



**Fig. 10**